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A NEW DEVELOPMENT AT BAT CAVE

Earlier in the summer a brief mention was made in the quarterly report of the North Carolina Natural Heritage Program of a pending lease of the Bat Cave wildflower preserve to the Nature Conservancy.

Since this was the first mention of such a negotiation, your editor wrote to Chuck Roe, Director of Natural Heritage Program, resulting in the following memo:

"About all I can tell you about the Bat Cave lease agreement is that the owner, Mrs. Margaret Flinsch, has for many years been negotiating with the Nature Conservancy to accept her donation of the Bat Cave as a preserve. The Conservancy has been reluctant to accept because of the management problems and costs. However, Mrs. Flinsch and the Conservancy are working out final arrangements on a short-term 'lease' agreement, by which the Conservancy will assume management responsibilities on a trial basis. Mr. Lawler will continue to serve as caretaker. My understanding is that entrance permission will be granted by the Nature Conservancy (or an appointed stewardship committee). I have forwarded your letter to UNC's Chapel Hill State Office for a more complete answer. Thank you for your congratulations."

SOME COMMON PLANTS ARE POISONOUS

Most plants are harmless, but a very small percentage is responsible for thousands of serious poisonings each year. The latest annual figures from the National Clearing House for Poison Control Centers indicate that more than 9,000 Americans suffered serious effects of plant poisonings and seven of those victims died.

The nine varieties noted here are among the most common--and most dangerous--of the poisonous plants you might encounter in your travels around the U.S.

The castor bean (*Ricinus communis*), found throughout the country near streams and ponds, is one of the most attractive of the poisonous plants. The plant may grow up to nine feet tall, and it bears its deadly seeds in spiny capsules, each containing three seeds. All parts of the plant are dangerous if eaten, but the seeds are the usual source of poisoning. Serious poisoning or even death can result from eating as few as two seeds.

Oleander (*Nerium oleander*) is normally a garden plant, but many states use this dangerous species as an ornamental roadside decoration. You may encounter it in rest areas and campgrounds as well, particularly in the South and West.

Every part of this plant can be deadly. Some people develop skin disorders by merely touching the plant, and deaths have resulted from the use of the plant's straight branches as skewers for meat or marshmallows.

Vomiting, dizziness and rapid pulse are some of the symptoms of oleander poisoning. Prompt medical attention is essential to prevent fatality.

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Deadly nightshade (*Solanum dulcamara*) even contains a warning in its name.

This species is found primarily in the eastern part of the country, but closely related varieties are found throughout the country. It usually grows in wooded areas or around old buildings.

All parts of the plant are dangerous, but the berries are the usual cause of poisoning, especially among children. As few as two berries have caused deaths. The usual symptoms of poisoning are excitability, dilated pupils, and a rapid but weak pulse.

Two varieties of elderberries (*Sambucus canadensis* and *pubens*) are found in North America. The black elderberry, which grows primarily in eastern and central states, is a large shrub bearing clusters of small black berries. The red elderberry shrub is similar in appearance and is found in the northern states and Canada. Both varieties are most commonly encountered in wooded areas.

The berries of the black variety may be safely used in making jelly and wine. But its stems are extremely dangerous. If these stems--which contain prussic acid--are consumed, the results may be convulsions, labored breathing the lack of coordination. All parts of the red elderberry, a closely related species, are poisonous.

Jimson weed (*Datura stramonium*), also called thornapple, is found in every state, usually in fields. This weed, which may grow up to four feet in height, has large, irregular leaves. Its white or purple flowers are trumpet-shaped, two to five inches long. Its seeds are contained in a hard, spiny capsule.

The entire plant is deadly. Serious poisonings and death have been reported after only a small piece of the plant has been eaten. Fast action is essential to prevent convulsions, coma, and death.

Water hemlock (*Conium maculatum*) is a deadly species found nationwide, always near streams and ponds. The plants may be recognized by their lacy foliage which resembles parsley or carrot tops.

Poisoning from water hemlock usually occurs because of confusion between these plants and garden vegetables. Nausea, dilated pupils, convulsions and labored breathing are symptoms.

Pokeweed (*Phytolacca americana*) is found mainly in woods and clearings in the eastern U.S. In some regions, the leaves are cooked as a vegetable. The poisonous chemicals are removed by boiling the plant twice, discarding the water from the first cooking.

When raw, however, the entire plant is poisonous. Its flowers and berries are carried on stems in long clusters. Children sometimes eat the segmented, purple berry.

If the symptoms of poisoning--vomiting, excessive sweating, and vision disturbances--develop, get the poison victim to a doctor.

Ranberry (*Actaea pachypoda*), also known as dolls'-eyes, is particularly dangerous. This plant can be found in most parts of the country, usually in woodlands. Two varieties occur in the East, while another species is

found in forests from the Rockies westward to the Pacific states.

Symptoms develop quickly after the plant has been eaten. They include vomiting, diarrhea, dizziness, and delirium. Deaths have been reported.

The buckeye or horse chestnut (*Aesculus octandra*) is a common source of plant poisoning. Buckeyes grow on large trees which are found in most parts of the U.S., usually in wooded areas. The fruit is borne in leathery capsules, each containing from one or three large, shiny brown seeds which look just like edible chestnuts.

Unlike the chestnut, however, the seeds of the buckeye can cause serious symptoms if accidentally eaten. Nausea, vomiting, weakness and a lack of muscle coordination are common results of eating these false chestnuts. If someone accidentally eats a buckeye, get help from the nearest medical facility.

If you suspect plant poisoning, get medical help as soon as possible. If you know what plant has been eaten, take along samples of the plant so it can be identified by authorities. Take anything you think may help. If a member of your party suddenly becomes ill, especially after you have stopped along the way, plant poisoning should be suspected. Don't waste time--get the victim to a doctor quickly.

Condensed from an article by George Campbell
in the summer issue of "Discovery," a
publication of Allstate Motor Club
(Scientific names added by the Editor)

HOW SEEDS ARE SPREAD

Although plant mechanisms for transporting seeds are not always apparent at first sight, a close examination of their seeds and fruits reveals some fascinating phenomena which account for their efficient dispersal over wide areas.

The four major categories of dispersal mechanisms are wind dispersal (anemochory), dispersal by the plant itself (autochory), animal dispersal (zoochory), and water dispersal (hydrochory). Plants may also incorporate a combination of these types, or a few may not disperse at all because they are in a stable environment.

Dispersal of Seeds by the Wind (Anemochory)

Seeds that take advantage of the wind for dispersal are the fruits containing hairs or plumes. The method can be compared to a man hanging from a parachute: the seed is carried like the man and the hairs or plume form the seed's parachute. The dandelion, cattail, milkweed, come readily to mind. In the springtime the air is so full of these "little parachutes" as to appear almost like a snowstorm.

Dispersal of By Wind

Sourwood

Maple

Ground Cherry

White Ash

Milkweed

Dandelion

Cotton-grass

Another type using wind dispersal are the plain winged fruits. The various twists and warps and tibedral arrangements of the wing affects reaction to air flow. Maple and ash samaras are common examples of this type of fruit.

Another type developed for wind dispersal are the inflated pods. Here the calyx (sepals and petals) enlarges after flowering and encloses the seeds inside. The ground cherry and Indian rattle (bladderfruit) have this type of fruit.

The tumbleweeds are a common example of a wind-dispersed plant. This entire plant rolls along the ground dispersing its seeds gradually from its stems.

Dispersal of Seeds by the Plant Itself (Autochory)

This dispersal method is fascinating because it involves dispersal of seed by the plant itself without dependence on an external medium such as wind, animals, rainwash, etc. This active seed ejection by the plant may take place in two ways: by the build up of tension in dead fruit tissues or by the build up of tension in living tissues. In both cases the fruit must go through desiccance, in which the walls of the fruit break allowing the seeds to escape.

The build up of tension in dead tissues is commonly found in legumes, geraniums, and witch hazel.

Researchers have found that the build up of tension in dead tissues causing the fruit to split and release its seeds may be long delayed while waiting for a rainy period. In the grass *Plantago vulgaris*, the sepals (sheath covering the seed) swells and opens up when it becomes wet and allows the seeds to escape.

In the geranium the whole carpel (package containing the seed) is severed elastically from the base of the fruit as a result of releasing tension in drying up dead tissues. Then the ribbon-like portion where the carpel is attached breaks away from the rostrum and the seed escapes from the parent plant.

A popular example of an explosive fruit is the witch hazel capsule. Here as the fruit dries, its outer coat splits, exposing the seeds. Then as further drying occurs, the inner fruit coat contracts and suddenly explosively discharges the seeds as far as 14 meters. So beware when walking in the woods.

Touch-me-nots or jewelweed exhibits explosive fruits that result from pressure in living cells. A weakening of the plant cells causes the outer walls of the touch-me-not fruit either spontaneously, or when touched, to roll up and eject the seeds.

Dispersal of Seeds by Animals (Zoochory)

Dispersal of seeds by animals is a very effective means of dispersal for a large number of plants.

Many animals store seeds or transport them some distance before they actually

Seeds by the Wind



White Lettuce



Devil's Darning Needle

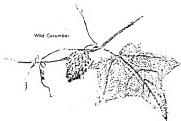


Cornail

Dispersal of Seeds by the Plant Itself



Pole Touch-me-not



Wild Cucumber

drop them, and in the process they scatter seeds or leave untouched some of the stored seeds. It has been reported that a single jay may transport 4600 acorns and fly with them a distance of four kilometers. Animal transport of fruits is very important for trees with large edible fruits such as beeches, walnuts, or birches. Rats may disperse horsechestnuts by nibbling on the seeds and abandoning them some distance from the tree. Squirrels may also carry horsechestnuts to their nests for storage or they may bury them.

Squirrels are important tree planters of oaks and also chestnut, beech, and hazel. Ants may also be important dispersers of plants.

A popular example of an ant-dispersed seed is the violet. Here there is a combination of dispersal mechanisms. Initially the plant may eject its seeds explosively. The seeds attract ants who disperse them further.

Dispersal of seeds after ingestion by a wide array of animals is highly complicated. For this type of dispersal many plants develop an indehiscent fruit (one that does not open up revealing its seeds) with a fleshy outer wall that is eaten whole—gourds and some legumes, or certain seeds may develop adaptations for attracting birds (magnolia, or bitter-sweet). Seeds must also develop characteristics so they are not ingested prematurely. This is accomplished by alternating colors of fruit at appropriate times—e.g., from green to red or yellow or blue—apples, blueberries, etc.

Perhaps the most interesting aspect of seed dispersal is the passive adhesion of certain fruits to the bodies of animals. This can occur by seeds sticking to the feet or legs of animals aided by mud or a mucilaginous seed covering or by seeds developing special appendages to attach to animal fur or feathers. The development of the hooks or bars on the achene of thistles is very effective for its dispersal because it has reached, by natural means, many of the islands of Polynesia.

Dispersal of Seeds by Water (Hydrochory)

Plant seeds may also be dispersed by rainwash, water bodies, or flooding. Several million seeds may pass any given spot in a flooded ravine in the course of 24 hours. In order to be dispersed the seeds must have a certain buoyancy or other means of surviving in water until they can adhere to the shore. For travel to oceanic islands or far-away places, they must have tough floating pods surrounding the seed or another device that will protect and carry them great distances over an extended period of time.

Excerpts from an article in the July-August 1980 issue of "The Conservationist"; authored by Getsy Lowe, a biologist and environmentalist. Illustrations by Thomas Payne.



Dispersal of Seeds by Animals

Cocklebur



Queen Anna's lace



Bur
Marigold



Biter Dock

Common Burdock



Ribwort